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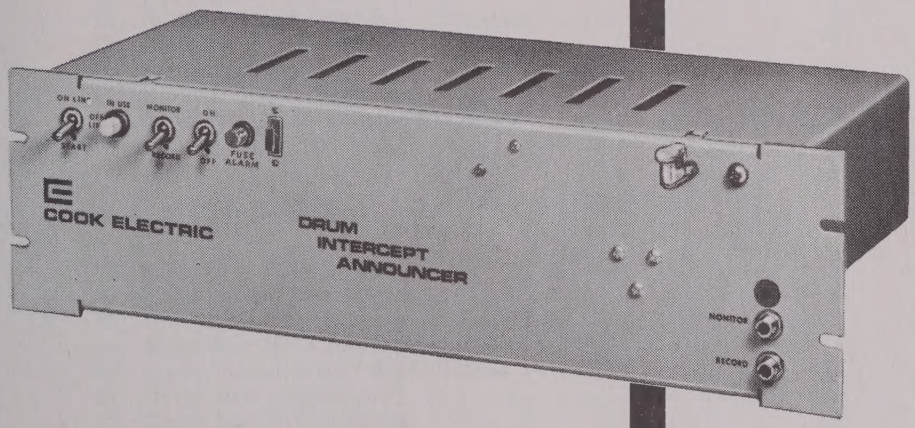
SINGLE CHANNEL
DRUM INTERCEPT ANNOUNCER
TYPE 201



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DRUM INTERCEPT ANNOUNCER
COOK ELECTRIC Type 201

SECTION 100 - DESCRIPTION

1. GENERAL.

1.01 This section provides description, specifications, and operating principles for the single-channel Cook Electric Type 201 Drum Intercept Announcer (DIA).

1.02 Refer to Section 200 for Drum Intercept Announcer installation procedures, Section 300 for operating procedures, and Section 400 for maintenance procedures.

2. DESCRIPTION (Refer to figure 1).

2.01 The single-channel DIA reproduces a recorded voice message in response to a remote command. The equipment is specifically designed to provide an audio message automatically in response to intercept of incoming calls in a central office telephone exchange. The equipment may be used to provide instructions to incoming callers who have dialed vacant numbers, vacant codes or levels, and any other dialing irregularity. The self-contained, solid state electronics package provides for a highly dependable, easy to install unit.

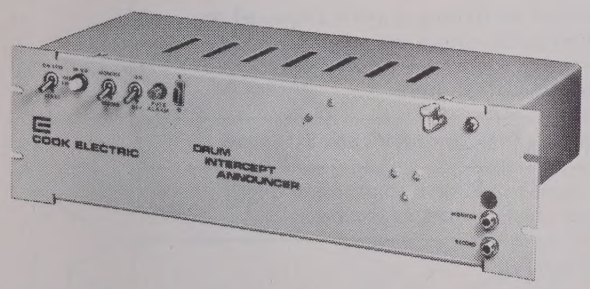


Figure 1. Type 201 Single-Channel Drum Intercept Announcer

2.02 The unit is designed for mounting in a standard 19-inch rack or in a cabinet. Controls and indicators are conveniently mounted on the front panel for easy access and visibility. The rear of the unit is protected by a cover held by nylon snap fasteners.

2.03 The electronics portion of the drum intercept announcer is contained on a replaceable plug-in circuit board accessible from under the rear cover. The drum drive mechanism, the recording drum, and recording head are mounted on the rear of the front panel. The message is recorded on a band of magnetic-particle-impregnated rubber mounted to the periphery of a drum. The magnetic recording head records and reproduces the voice signal.

2.04 A message up to 12 seconds in length can be recorded on the drum (14 seconds for DIA part No. 209100-105). Average speaking volume into a telephone handset provides the proper recording level. The output level is adjusted using a potentiometer control (R53) on the circuit card. MONITOR and RECORD jacks are located on the front panel.

3. SPECIFICATIONS.

3.01 Table 1 lists the specifications for the Type 201 Drum Intercept Announcer (also see fig. 1A).

3.02 Units with serial number 1399 and lower use schematic diagram figure 8. Units with serial number 1400 and higher use schematic diagram figure 9 and have a production change to add fuse F1 (moved from circuit board) and FUSE ALARM lamp DS2 to the front panel.

4. OPERATING PRINCIPLES.

4.01 The single-channel drum intercept announcer is controlled by two switches, S2 and S3. Switch S2 has three positions, ON LINE, OFF LINE, and START. In the ON LINE position, the announcer will respond to a momentary external input signal (ground on ST, pin 9 of TB1), will rotate through one revolution, and reproduce the recorded message into the front panel MONITOR phone jack and into the output line.

4.02 In the OFF LINE position of S2, the drum cannot be started, either remotely or locally. If OFF LINE is selected after rotation has begun, rotation will continue through the completion of one cycle of the drum.

4.03 The START position of S2 is a spring-loaded position and it is used to commence rotation of the drum to; a) reproduce the recorded message, b) erase the recorded message, or c) erase and record a new message. One of these is selected by switch S3 which has positions MONITOR and RECORD.

4.04 The MONITOR position of S3 permits the reproduction of the recorded message into the front panel MONITOR phone jack and into the output line (these outputs are always connected to each other) when the drum is caused to rotate.

4.05 The RECORD position of S3 conditions the announcer to erase the message or to erase and record a new message. The erase/record function can be initiated only by first selecting RECORD on S3 and then depressing START on S2.

Table 1. Operating Specifications

CHARACTERISTIC	DESCRIPTION
Phone Input Sensitivity	Normal voice signal from a series 500 telephone handset (150 millivolts at 1 kHz from a 600 Ω source)
Monitor and Record Jack Arrangement	Two jacks for alternate use with a single, three-conductor plug.
Message Length	12 sec. (14 sec. for DIA part No. 209100-105)
Signal-to-Noise Ratio	35 dB
Output Impedance	8 ohms
Output Power	Capable of driving 150 - 600 ohm trunks (with 300 ohm transient protection resistors in each line); at +6 dBm.
Primary Power Requirement	-44 to -56 Vdc, 25 watts max
Temperature	0°F to 140°F
Humidity	10% to 95% relative humidity (noncondensing)
Electrical Safety Features	Amplifiers have short circuit protection. Input power terminals have reverse voltage and transient protection. Two user switching errors required to inadvertently erase message.
Height	5.25 inches (133 mm)
Width	19 inches (483 mm) RETMA Standard
Depth	7.5 inches (191 mm) maximum depth behind panel mounting surface.
Weight	8.5 pounds

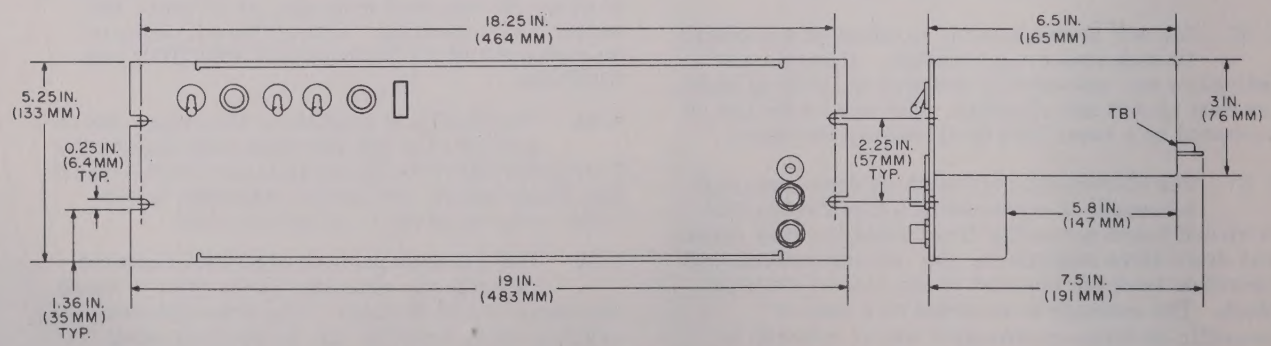


Figure 1A. Drum Intercept Announcer Installation Details

SECTION 200 - UNPACKING and INSTALLATION

5. GENERAL.

5.01 This section provides unpacking and installation procedures for the Cook Electric Type 201 Drum Intercept Announcer.

6. UNPACKING (Refer to figure 2).

6.01 Unpack the single-channel DIA as follows:

(1) Remove the styrofoam wedges from the top of the box.

(2) Remove the announcer and its styrofoam end pads from the box, and remove the end pads from the announcer. Remove drum lubricant vial (1 ounce of Dow Corning 550 silicone lubricant) from right hand styrofoam end pad.

(3) Remove the rear cover from the announcer unit. (Refer to paragraph 20.)

(4) Remove the styrofoam block at each of the two pulleys. The styrofoam block behind speed reducer pulley is removed by gently sliding the block sideways until it is clear of the pulley.

(5) Clean drum band with a lint-free cloth moistened with isopropyl alcohol. Next apply an even coat of D.C. 550 silicone

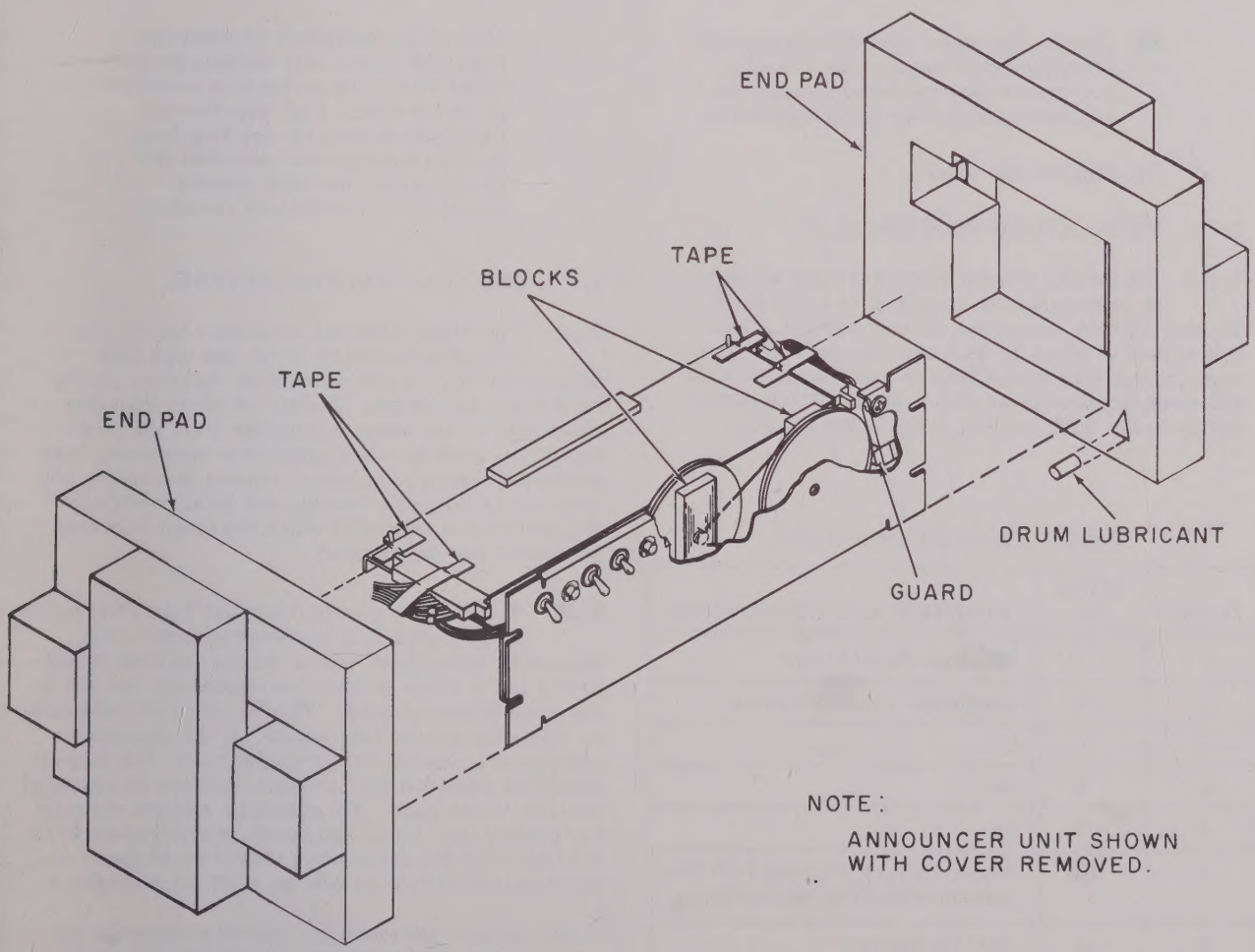


Figure 2. Single-Channel Drum Intercept Announcer Unpacking

lubricant to the surface of the drum band with a swab or lint-free cloth. Proper

CAUTION

Always rotate the drum clockwise as viewed from the front to avoid damage to the cam switch. Also, never rotate a dry drum in contact with the head; raise the head slightly and lubricate the drum before rotation.

lubrication is required in order to obtain a smooth recording and to prevent unnecessary wear of the recording head and band. Do not allow an excessive amount of lubricant to contact the rim of the drum. Add oil to the cup to saturate the wick; repeat every 30 to 60 days.

(6) Remove the paper tape which binds the printed circuit board to the chassis, and ensure that the board is securely snapped onto its four nylon fasteners.

(7) Replace the cover.

7. INSTALLATION PROCEDURE.

7.01 The single-channel drum intercept announcer is designed for mounting in a standard 19-inch RETMA equipment rack or cabinet. The unit is held in place by four machine screws. Terminal board TB1 connections at the rear of the unit are made in accordance with table 2. Place power switch in the OFF position prior to installation.

Table 2. Terminal Connections

TB NO.	TERM. NO.	FUNCTION AND DESCRIPTION
1	1, 2	Message Signal Output
1	3	Announcer Chassis Ground
1	5	C
1	6	MC
1	9	ST
1	10	Power Failure Warning (-50 Vdc present when fuse has blown)
1	11	-50 Vdc Battery
1	4, 8	Battery Ground

7.02 Connection to the output of the drum intercept announcer must be made through a 300 ohm resistor, one in each output line of each 600 ohm access circuit. These resistors are necessary to protect the drum intercept announcer output circuits from line transients, to provide impedance matching between the drum intercept announcer and the line, and to prevent low impedance connection between lines which access the drum intercept announcer at the same time. The drum intercept announcer is capable of driving 150 such circuits connected in this manner. Similarly, 900 ohm access circuits must have 450 ohm resistors in each output lead. The announcer is capable of driving 225 of the latter circuits. Note that it is not sufficient to install one of these resistors on each of the output terminals of the announcer. The resistors must be installed in each leg of each trunk circuit or subscriber line which might access the announcer (see figure 3).

NOTE

Each of the connector or selector intercept trunks may already be provided with a 300 to 400 ohm resistor in series with a 2 μf talk-through capacitor in each tip and ring lead. Such an arrangement satisfies the isolation and matching requirements without additional resistors.

8. INSTALLATION PRECAUTIONS.

8.01 The drum intercept announcer contains a magnetic recording drum and high gain amplifiers that may be affected by inductive pickup from other equipment. Install the drum intercept announcer as far away as possible from the other equipment such as: dial speed test equipment, tone machines, battery chargers, ringing machines, etc. Intensity of magnetic leakage and local conditions will govern the degree to which the drum intercept announcer may be affected.

8.02 The chassis ground (terminal 3 on TB1) must be grounded to a low noise ground. The announcer is equipped with a jumper between terminals 3 and 4 which grounds the announcer chassis to the main battery ground. This is generally adequate to minimize ground loop noise. If the announcer chassis is grounded to a grounded rack, the jumper should be removed and terminal 3 should be grounded directly to the rack. To minimize induced noise on the battery feed lines, the power connection leads to the DIA from the battery bus should be 18 gauge or heavier, and should be kept as short as possible.

8.03 Before attempting to record a message or check performance, operate the announcer drum drive mechanism for 15 minutes to exercise the drive belts.

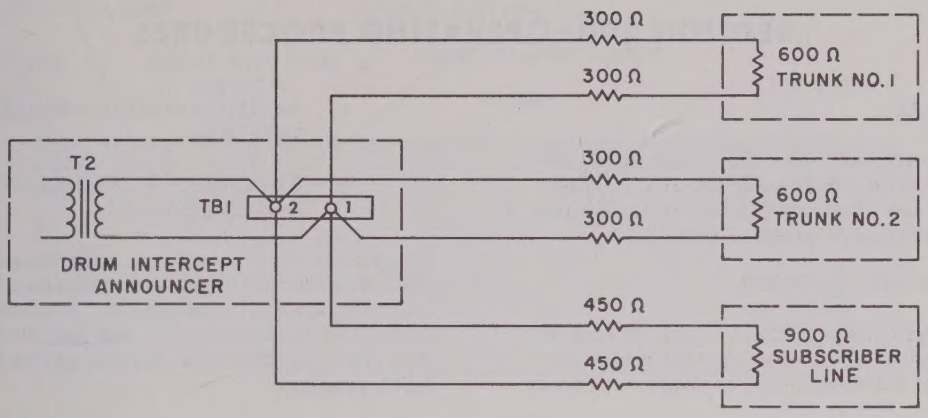


Figure 3. Isolation Resistor Connection Details

SECTION 300 - OPERATING PROCEDURES

9. GENERAL.

9.01 This section provides the operating procedures for the single-channel DIA. Front panel controls are illustrated in figure 4. A description of their functions is given in table 3.

10. EQUIPMENT TURN-ON.

10.01 The single-channel drum intercept announcer is turned on using controls located on the front panel. Set the front panel controls as follows:

a. MONITOR/RECORD switch (S3) to MONITOR.

b. ON LINE/OFF LINE/START switch (S2) to OFF LINE.

Turn on the equipment by placing the power switch in the ON position. Refer to paragraph 11 for recording and playback of messages. If messages have previously been recorded, and operation in exchange service is desired, place mode switch S2 in the ON LINE position.

Table 3. Front Panel Controls and Indicators

NAME	REFERENCE DESIGNATION	FUNCTION
Power switch (ON-OFF)	S1	Controls -50 Vdc power input.
Mode switch (ON LINE/ OFF LINE/START)	S2	Three-position toggle switch. In ON LINE position, drum intercept announcer operates automatically to reproduce message upon remote control command. In OFF LINE position, drum intercept announcer will not respond to any commands. Message can be monitored by depressing to START momentarily. In the START position, drum will begin to turn and if released to OFF LINE will continue through one revolution and will stop on the cam switch position. A message can be recorded using the RECORD position of the drum control switch.
Drum control switch (MONITOR/RECORD)	S3	Two-position toggle switch. In the MONITOR position, the message on the drum will be reproduced into the front panel MONITOR jack and into the announcer output lines when the drum is rotated. In the RECORD position, the drum will be erased if S2 is depressed to START until the IN USE lamp is lit. A new message may be recorded with these switch operations via the front panel RECORD jack and a telephone handset.
IN USE lamp	DS1	IN USE lamp glows during rotation of the drum whether message is being recorded, erased, or reproduced.
→ FUSE ALARM lamp*	DS2	Indicator lamp lights red when Fuse F1 opens.
MONITOR phone jack	J4	Monitor jack provides the recording message output to the front panel of the announcer between the ring and sleeve connections.
RECORD phone jack	J5	RECORD jack provides bias current to, and accepts voice signals from, a telephone handset for recording on the drum. Only the tip and sleeve connections are used for recording. Other signals may also be recorded via this tip and sleeve connection.
→ Fuse	F1	.75A GMT (Grasshopper Type).
→ *On units with serial number 1400 and higher.		

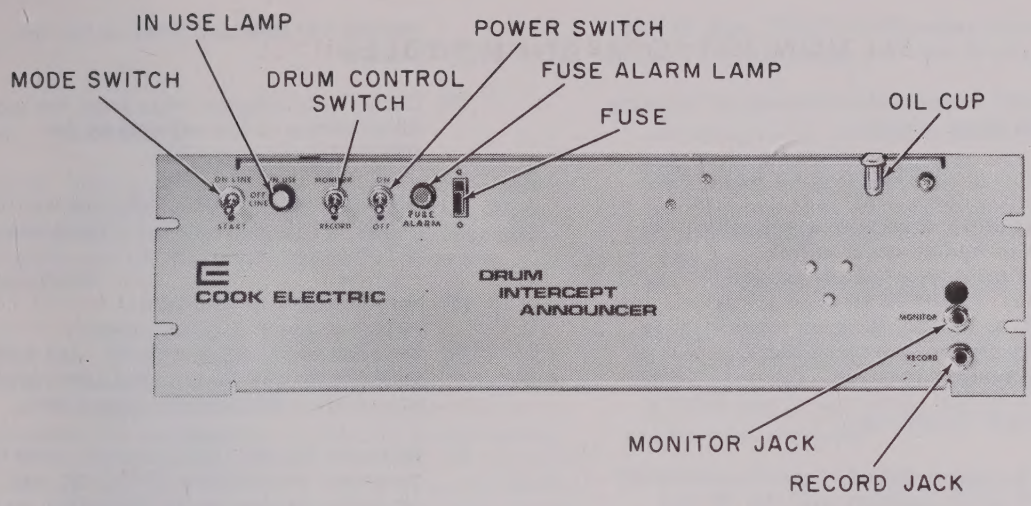


Figure 4. Single-Channel Drum Intercept Announcer Front Panel

11. RECORDING AND PLAYBACK OF MESSAGE.

11.01 Recording a message is accomplished in accordance with the following step-by-step procedure. Use a standard series 500 telephone handset wired in accordance with figure 5 (or use Cook Electric handset Cat. No. 180-0035).

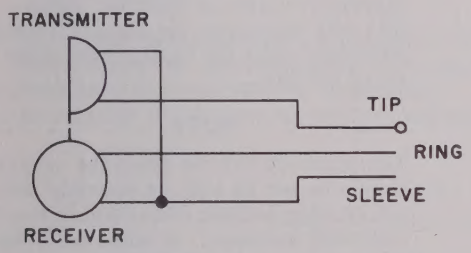


Figure 5. Handset Schematic Diagram

(1) Insert the phone plug from the handset into RECORD jack J5. Be sure plug is firmly seated.

(2) Set switch S2 to OFF LINE and wait for IN USE lamp to go out if the drum is still turning.

(3) Set switch S3 to RECORD.

(4) Depress switch S2 to START and hold until the IN USE lamp is lit and immediately thereafter, speak into the handset at a volume level which would be adequate in conversing with another party at a distance of 6 feet. Erasure of the old message will occur automatically.

(5) When the IN USE lamp goes out, switch S3 to MONITOR, remove the handset from the RECORD jack, and insert it into the MONITOR jack J4.

(6) Depress S2 to START and hold until the IN USE lamp is lit; listen to the recorded message. To set the volume to a different level, remove the rear cover and with a small bladed screwdriver, readjust potentiometer R53, located on the printed circuit board in the right rear area of the board (R53 is marked on the printed circuit board).

(7) If message is satisfactory, leave switch S3 set to MONITOR. Set switch S2 to ON LINE. The drum intercept announcer is ready for automatic operation. If message is not satisfactory, repeat steps (1) through (6).

12. ERASURE OF MESSAGE.

12.01 The message is erased by the following method:

(1) Set switch S2 to OFF LINE, and wait for drum to stop if drum is still turning.

(2) Set switch S3 to RECORD.

(3) Ensure that there is no signal coupled into the announcer via the RECORD phone jack.

(4) Depress switch S2 to START until the IN USE lamp is lit and then release. Wait for IN USE lamp to go out after one revolution.

(5) Set switch S3 to MONITOR.

(6) Insert phone plug into the MONITOR phone jack.

(7) Depress switch S2 to START until IN USE lamp is lit and then release.

(8) Monitor erasure effectiveness by listening to the phone handset.

NOTE

The possibility of accidental message erasure is limited because two switches must be set to the proper condition. Switch S3 must be set to RECORD and switch S2 must simultaneously be depressed to START before erasure can occur.

13. EQUIPMENT TURN-OFF.

13.01 Turn-off is accomplished by placing switch S2 in the OFF LINE position until the IN USE lamp goes out, then placing the power switch in OFF position.

14. REMOTE CONTROL SIGNALS.

14.01 Table 4 indicates the remote control functions associated with the drum intercept announcer.

15. RECORDING FROM A CASSETTE RECORDER.

15.01 The single-channel DIA is also capable of making a full level recording from the earphone jack of a standard cassette recorder. This may be useful when the ambient noise level at the DIA is too high to permit a good recording with a handset. An adapter cable having a cassette mini-jack on one end and a standard 2-conductor phone jack on the other end (Switchcraft part No. 40DK05, or equivalent) must be used. In addition, a quality cassette recorder with good speed stability should be used. If possible, operate the cassette recorder in the battery mode, in order to eliminate the possibility of 60 Hz hum pickup.

(1) Record the message on the cassette at the maximum level which will not introduce audio distortion.

(2) Set the cassette playback to a normal, undistorted listening level on its own speaker.

(3) Connect the adapter cable from the earphone output of the cassette to the RECORD jack of the DIA.

(4) Set switch S2 to OFF LINE, and wait for the IN USE lamp to go out if the drum is still turning.

(5) Set switch S3 to RECORD.

(6) Depress switch S2 to START, and hold until the IN USE lamp lights, then release S2 and start the cassette in playback.

(7) When the IN USE light goes out, stop the cassette, switch S3 to MONITOR, and connect a handset to the MONITOR jack, as in step (5) of paragraph 11.01.

(8) Depress switch S2 to START, and monitor the playback signal. Adjust the DIA volume as described in step (6) of paragraph 11.01.

NOTE

Do not compensate for an under-recorded message by increasing the playback volume of the DIA, since this will decrease the signal-to-noise ratio and make the background noise more audible.

NOTE

The playback volume from the cassette should be set as high as possible without causing audible distortion in the DIA recorded message. If noise or distortion appears high, reduce the playback volume from the cassette recorder, and repeat steps (2) through (8).

(9) When recorded message is satisfactory, leave switch S3 set to MONITOR. Set switch S2 to ON LINE, and disconnect the adapter cable.

Table 4. Remote Control Signals

NAME	FUNCTION
Start Message (ST)	Grounding the ST line externally causes the drum to rotate and the message to be reproduced (ON LINE operation only).
Drum Status (C)	A continuous closure to battery ground is provided while the drum is not on cam position (i.e., during drum rotation). No restriction.
Mode Status (MC)	A closure to battery ground is provided when the drum is on cam position (i.e., when the drum is stopped). No restriction.

SECTION 400 - MAINTENANCE

16. GENERAL.

16.01 This section provides cleaning and lubrication procedures, a troubleshooting table, alignment details, parts replacement, and a schematic diagram for the single-channel drum intercept announcer.

17. CLEANING AND LUBRICATION.

17.01 Clean the recording head and recording band at regular intervals with isopropyl alcohol, to minimize the accumulation of dirt and contaminants. A 30-day interval is suggested, but longer or shorter intervals may be satisfactory depending on the particular environment. The drive belts and pulleys do not require cleaning unless excessive wow/flutter develops in the recording.

NOTE

Always rotate the drum clockwise as viewed from the front to avoid damage to the cam switch. Never rotate a dry drum in contact with the head; raise the head slightly or lubricate the drum before rotation.

17.02 The DIA is provided with a front-panel oil cup, which keeps the recording band lubricated with silicon fluid (Dow Corning 550, or equivalent). Proper lubrication is required to obtain a smooth recording and to prevent excessive wear to the head and band. The wick in contact with the recording band should be kept moist by addition of fluid to the cup. (Every 30 to 60 days is generally sufficient.) Do not allow lubricant on the drive belts or pulleys.

18. CORRECTIVE MAINTENANCE.

18.01 Table 5 lists a number of corrective maintenance possibilities, with the means to isolate and correct them. Broken wires are not expected nor included in this table, due to the low probability of such occurrences.

CAUTION

Turn off announcer power before removing or replacing circuit board.

NOTE

Set switch S2 to OFF LINE and switch S3 to MONITOR for all troubleshooting procedures, unless specified otherwise.

NOTE

Be sure the single-channel drum intercept announcer is installed properly and that the proper record/playback procedure is being used before starting these troubleshooting procedures.

Table 5. Corrective Maintenance

STEP NO.	TROUBLE	PROBABLE CAUSE	REMEDY
1	No output.	Defect in circuit board.	Replace circuit board.
		Defect in recording head for the applicable channel.	
		a. Recording head misaligned.	a. Refer to paragraph 19 for alignment procedure.
		b. Recording head defective.	b. Set power switch to OFF. Unplug recording head connector and measure dc resistance of recording head windings (refer to figure 7 for detail of recording head to identify pin numbers).

Pin No.	Ohms
1-2	500 ± 150
3-4	75 ± 23

Table 5. Corrective Maintenance (Contd)

STEP NO.	TROUBLE	PROBABLE CAUSE	REMEDY
2	Will not record (fuse not blown and drum rotates).	Defect in circuit board. Defect in recording head. a. Recording head misaligned. b. Recording head defective.	Replace circuit board. a. Refer to paragraph 19 for alignment procedure. b. Same as remedy in step 1 for defective recording head.
3	Blown fuse. NOTE On units with serial number 1399 and lower, fuse is located on circuit board. On units with serial number 1400 and higher, fuse is located on front panel.	Trouble in motor B1, transformer T3 or in circuitry on the circuit board.	Set power switch to OFF. Carefully pull connector P1 away from the circuit board. Using a terminal extraction tool (AMP P/N 465195-1) remove terminals (with wires attached) from sockets 10 and 12 of plug P1 and mark with tape or string for correct insertion later. Gently re-connect P1 to the circuit board. Replace fuse F1 with a good fuse of the same rating. Set power switch to ON. If the fuse does not blow, trouble is probably in the motor. Replace the motor. If the fuse blows, trouble is probably not in the motor. Turn power OFF, remove P1 and replace the previously removed terminals to their proper socket in P1 by gently pushing each with thumb and forefinger until they snap into place. An examination of those terminals still in place will show the proper orientation of the terminal for correct insertion. Remove terminals from P1 sockets 1 and 2 and mark as before. Replace P1 onto the circuit board and insert a new fuse as before. Set power switch to ON. If the fuse does not blow, trouble is probably in the power supply section of the circuit board. Replace the circuit board. If the fuse blows, trouble is probably not in the power supply section of the circuit board nor, as noted previously, in the motor. Turn power OFF, remove P1 and replace terminals to sockets 1 and 2 of P1. Remove terminals from sockets 3 and 8 of P1. Replace P1 onto the circuit board and insert a new fuse as before. Set power switch to ON. If the fuse does not blow, trouble is probably in the transformer. Replace the transformer. If the fuse blows, trouble is probably in the transformer driver section of the circuit board. Replace the circuit board.

Table 5. Corrective Maintenance (Contd)

STEP NO.	TROUBLE	PROBABLE CAUSE	REMEDY
4	Recording drum will not rotate.	Trouble in motor A8.	Measure for a voltage of 24 Vac between pins 4 and 5 of transformer T3. If voltage is present and motor does not turn when switch S2 is depressed to START, replace motor.
		Trouble in transformer T3.	If the voltage is not present at terminals 4 and 5 as tested above, measure for a voltage of 92 volts at terminals 1 and 3 of T3. If the voltage is present, the trouble is probably in the transformer. Replace the transformer.
		Drive belt, or belts, broken.	Replace drive belts per paragraph 22. Readjust motor belt per paragraph 21.
5	Announcer develops excessive wow/ flutter (wavering voice tone).	Insufficient lubricant on recording band.	Lubricate per paragraph 17.
		Oil on drive belts.	Clean pulleys and drive belts with isopropyl alcohol and dry thoroughly (see paragraph 21).
		Worn bearings in speed reducer pulley shaft.	Replace bearings.
		Inadequate head pressure (head pressure should be 30 to 50 grams).	Refer to figure 7. Loosen set screw (3) and rotate collar (6) to obtain required head pressure.
6	60 Hz noise on lines.	Inadequate grounding or grounding loops.	Check to be sure announcer is installed per paragraph 8. Ground connections must be tight. Clean connectors and contact areas on circuit board. Check for loose wiring.
		Faulty component in power supply or amplifier on circuit board.	Replace circuit board. (Refer to paragraph 23.)

19. RECORDING HEAD ALIGNMENT.

19.01 A satisfactory field adjustment can be made with the following procedure.

NOTE

Optimum head alignment per factory procedure is not practical for field adjustments.

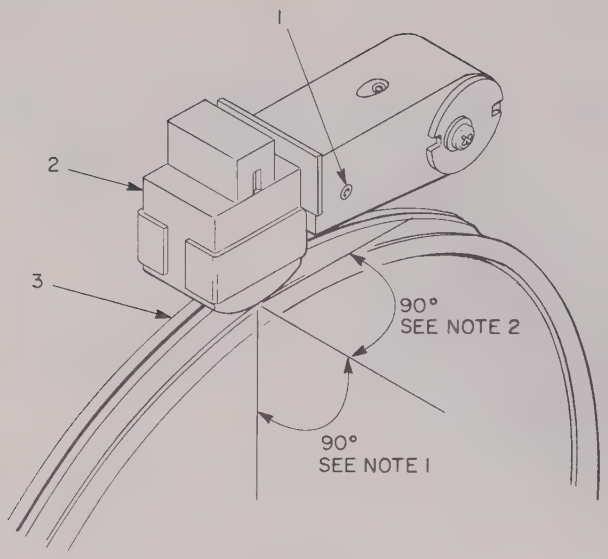
(1) Set power switch to OFF.

(2) Observe that recording head is properly seated in its holder and is aligned squarely with the recording drum as shown in figure 6. If realignment is necessary, loosen head clamp setscrew (1, figure 6) and pivot head to the proper position. Coat head clamp stud setscrew with Loctite, grade A, and tighten.

(3) Loosen setscrew (1, figure 7) to loosen eccentric bushing (2, figure 7) for the head adjustment.

CAUTION

Do not loosen setscrew (3, figure 7) on the shaft collar. This setscrew maintains spring torque for head pressure and requires a force gauge for proper adjustment (refer to table 5, step 5).



NOTES:
1. LOOSENING HEAD CLAMP SETSCREW ALLOWS PIVOTING OF RECORDING HEAD IN THIS DIRECTION.
2. PRESET AT 90 DEGREES.

LEGEND:
1. HEAD CLAMP SETSCREW
2. RECORDING HEAD
3. RECORDING DRUM

Figure 6. Recording Head Position Alignment Details

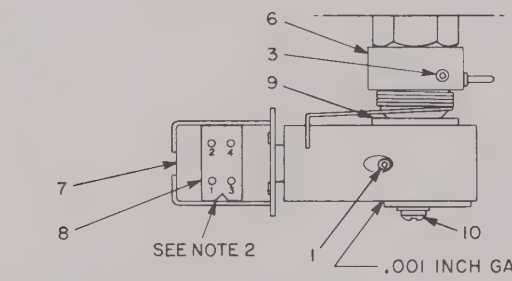
(4) Carefully rotate the eccentric bushing (2, figure 7) to set the record/playback gap (4, figure 7) in the recording head perpendicular to the surface of the recording drum. The record/playback gap is a 100 microinch separation on the head and is approximately 0.06 inch away from the erase gap (5, figure 7), which is clearly visible. A magnifying glass may be required to see the gap clearly. The proper adjustment will result in the record/playback gap being in slightly better contact with the drum than the erase gap.

(5) Tighten eccentric bushing setscrew (1, figure 7).

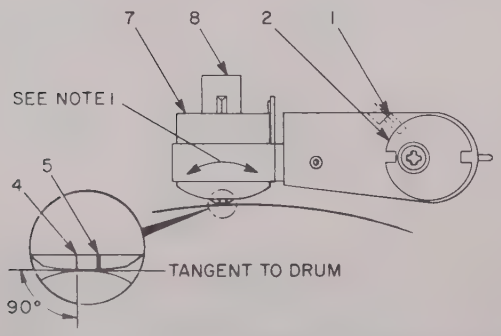
(6) Set power switch to ON and record a message as described in paragraph 11 or 15.

(7) If recording is satisfactory, erase message as described in paragraph 12.

(8) If erasure is satisfactory, the head alignment is complete. If erasure is not satisfactory, repeat steps (1) through (5) to bring the erase gap more nearly perpendicular to the surface of the recording band. Better record/playback gap contact will result in stronger record/playback performance of the announcer at the expense of less erasure. A more nearly perpendicular erase gap will result in better erasure at the expense of record/playback performance.



NOTES:
1. TURNING ECCENTRIC BUSHING "ROCKS" RECORDING HEAD AS SHOWN.
2. OBSERVE POSITION OF KEY NOTCH IN RECORDING HEAD CONNECTOR.
3. HEAD CONTACT FORCE SHOULD BE 30-50 GRAMS, MEASURED AT CENTER OF RECORDING HEAD CONNECTOR.



LEGEND:
1. ECCENTRIC BUSHING SETSCREW
2. ECCENTRIC BUSHING
3. COLLAR SETSCREW
4. RECORD/PLAYBACK GAP
5. ERASE GAP
6. SPRING ADJUST COLLAR
7. RECORDING HEAD
8. RECORDING HEAD CONNECTOR
9. BRONZE FLAT WASHER
10. PAN HEAD SCREW AND WASHER

Figure 7. Recording Head Gap Alignment Details

20. COVER REMOVAL AND REPLACEMENT.

20.01 The drum intercept announcer cover is fastened by two push-lock fasteners on the rear of the cover. To remove the cover, pull out on the two fastener handles until they snap to the unlocked position. Pull the cover to the rear until the fasteners clear the mounting holes in the chassis. Then remove the cover. When replacing the cover, first engage the lips on the front edge of the cover with the notches in the flange on the front panel. Then align the fasteners with the chassis holes. Be sure the handles on the fasteners are in the unlocked position, then push in on each handle to lock the fasteners.

21. DRIVE BELT ADJUSTMENT.

NOTE

Before adjusting, be sure belts and pulleys are not oily; clean with isopropyl alcohol.

21.01 Motor belt tension is adjusted by first loosening the two motor mounting nuts. Then position the motor so that sufficient tension is applied to the belt to prevent slippage at motor pulley. Verify by checking that message length does not exceed 12 seconds, light-on to light-off (14 seconds for DIA part No. 209100-105). Excessive tension can stall motor and shorten bearing life. The drum drive belt requires no adjustment. Do not attempt to adjust message length by varying oscillator control potentiometer R6; this is a factory adjustment.

22. DRIVE BELT REPLACEMENT.

22.01 Replacement of either drive belt is relatively simple. Place the new belt over the larger pulley and stretch it slightly to fit over the smaller pulley. Be sure belts and pulleys are oil-free.

CAUTION

The belt from the motor pulley to the speed reducer pulley is not to be used as a replacement for the belt from the speed reducer to the recording drum. Interchanging these belts will cause excessive wow and flutter.

23. CIRCUIT BOARD REPLACEMENT.

23.01 All of the record, playback, power supply and control relay circuits are located on the circuit board assembly. The board is easily removed and replaced by the following procedure:

(1) Unplug board edge connectors P1 and P2.

(2) Lift board off the 4 plastic support standoffs and remove.

(3) Place new board on the 4 plastic support standoffs and snap into position. Plug in connectors P1 and P2.

(4) Adjust potentiometer R53 for the desired playback level.

24. REPLACEMENT PARTS.

24.01 Table 6 lists the parts which can be replaced using normal maintenance instructions.

25. SCHEMATIC DIAGRAMS.

25.01 The schematic diagrams for the drum intercept announcer are shown in figures 8 and 9.

Table 6. Replaceable Parts List

REF DESIG	CAT. NO.	DWG NO.	DESCRIPTION
-	180-0106	600194	Record/Playback, Erase Head
B1	180-0117	600245	Motor
DS1	180-0118	701325-002	IN USE Lamp
DS2	701325-001	701325-001	FUSE ALARM Lamp*
S4	180-0119	702125	Cam Switch
-	209130	209130	Circuit Board Assembly**
T3	180-0121	600238	Power Transformer
-	180-0123	702124-004	Drive Belt - Motor
-	180-0124	702124-003	Drive Belt - Drum
F1	180-0125	701333-002	Fuse, GMT 3/4 A.
-	180-0116	701480	Dow Corning 550 Oil

*Only on units with serial number 1400 and higher.
**On units with serial numbers 1399 and lower: Cat. No. 180-0120; Dwg. No. 209101.

NOTES

NOTES:
1. UNLESS SPECIFIED OTHERWISE: ALL RESISTANCE VALUES ARE IN OHMS.
2. REFER TO SECTION 200 FOR USE OF GROUNDING JUMPER BETWEEN TERMINALS 3 AND 4 OF TB1.
3. CAPACITOR C26 USED ONLY WHEN U5 IS A TYPE LM301 OR TYPE TL080 INTEGRATED CIRCUIT.
4. CIRCUIT BOARD ASSEMBLY NO: 209101 (DWG. REF: 209102-N).
5. APPLIES TO DRUM INTERCEPT ANNOUNCERS SERIAL NO. 1399 AND LOWER.

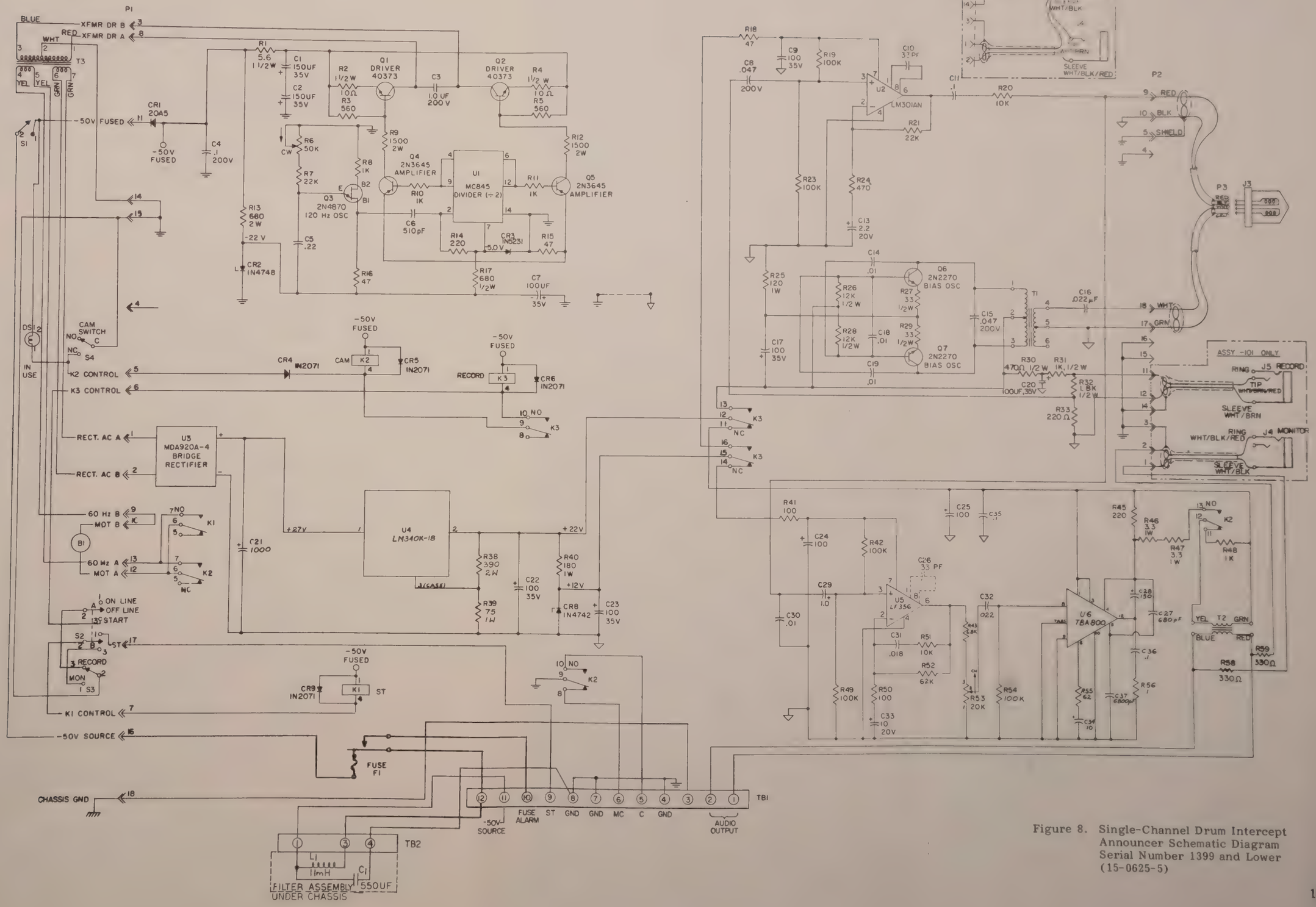


Figure 8. Single-Channel Drum Intercept Announcer Schematic Diagram Serial Number 1399 and Lower (15-0625-5)

NOTES:
1. UNLESS SPECIFIED OTHERWISE: ALL RESISTANCE VALUES ARE IN OHMS.
2. REFER TO SECTION 200 FOR USE OF GROUNDING JUMPER BETWEEN TERMINALS 3 AND 4 OF TBI.
3. CAPACITOR C26 USED ONLY WHEN U5 IS A TYPE LM301 OR TYPE TL080 INTEGRATED CIRCUIT.
4. CIRCUIT BOARD ASSEMBLY NO: 209130 (DWG REF: 209165-B).
5. APPLIES TO DRUM INTERCEPT ANNOUNCERS SERIAL NO. 1400 AND HIGHER.

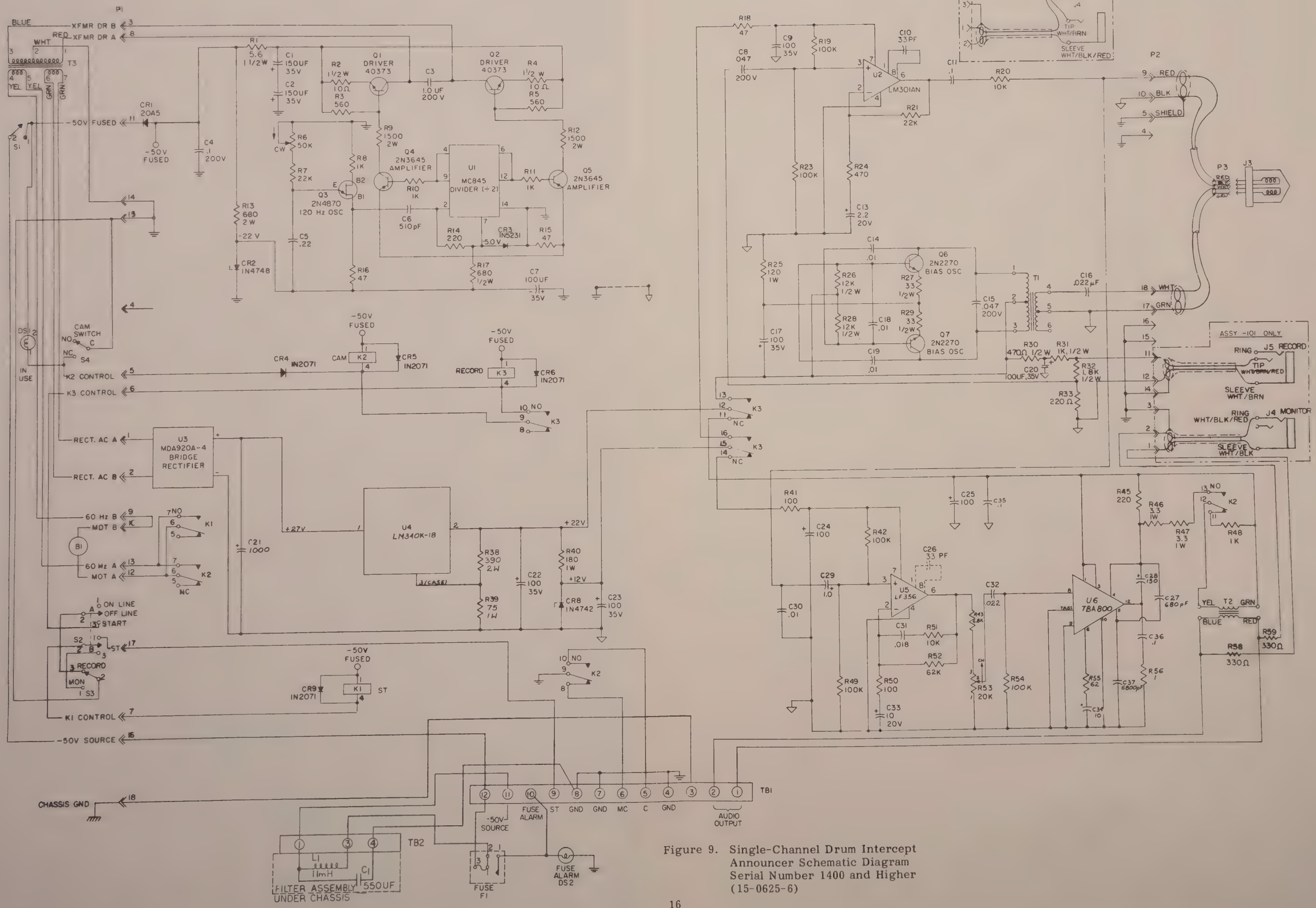


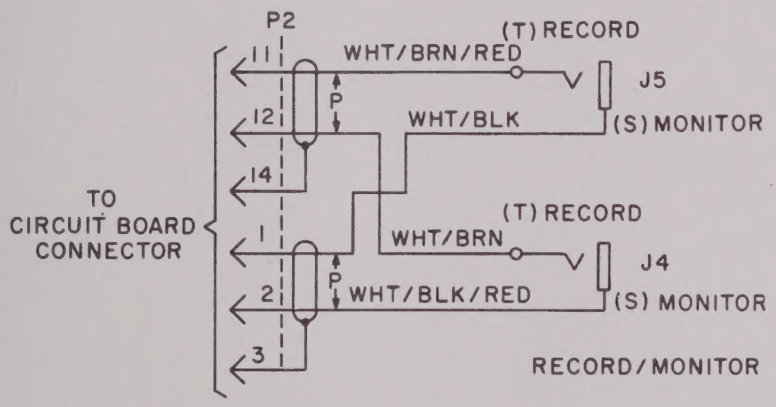
Figure 9. Single-Channel Drum Intercept Announcer Schematic Diagram Serial Number 1400 and Higher (15-0625-6)

APPENDIX I

DRUM INTERCEPT ANNOUNCER TYPE 201,
(MOTOROLA PART NO. 77D84875K01)
EQUIPPED WITH JACKS TO ACCEPT A
WESTERN ELECTRIC STYLE TWIN-PLUG

1. The basic Type 201 Drum Intercept Announcer can be modified under Assy. No. 180-0021 to permit using a single Western Electric style twin-plug for monitor and record circuit connections. This permits a single plug-in connection to be made for both recording and monitoring when the twin-plug is properly wired to a handset transmitter and receiver. The basic Type 201 DIA requires moving the single handset plug between the MONITOR and RECORD jacks.

2. The record/monitor jacks and receiver/transmitter connections for the Western Electric style twin-plug are provided in figure I-1.



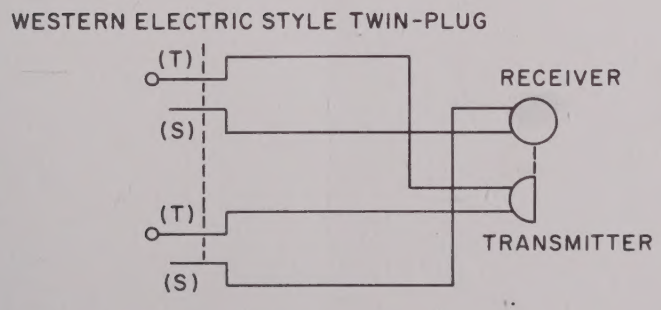


Figure I-1. Record/Monitor Jacks and Handset Connections for 180-0021 Assembly

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